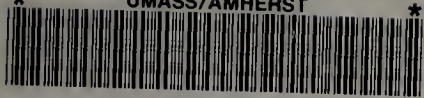


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CHAPTER 1

ANNUAL EVALUATION REPORT

Fiscal Year 1985

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ANNUAL EVALUATION REPORT
Fiscal Year 1985

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INTRODUCTION

Fiscal Year 1985 marks the third year in which federally funded compensatory education operated under Chapter 1 of the Education Consolidation and Improvement Act of 1981 (ECIA) enacted as part of Subtitle D of Title V of the Omnibus Budget Reconciliation Act of 1981, P.L. 97-35. Chapter 1 ECIA replaced Title I of the Elementary and Secondary Education Act as the federal legislation providing financial assistance to state and local education agencies to meet the educational needs of educationally deprived students.

Fiscal year 1985 also marks the sixth year in which Massachusetts federally funded compensatory education programs have used the Title I Evaluation and Reporting System (TIERS) on a statewide basis. This system was developed by the U.S. Department of Education to collect and aggregate uniform data on levels of participation, parent activities, staffing and project impact on achievement test scores at the local, state and federal levels. Although evaluation requirements under Chapter 1, ECIA do not prescribe this reporting system for state and local Chapter 1 programs, Massachusetts continues to employ it in order to obtain a systematic and valid assessment of Chapter 1 services and their impact.

Except for the first section on LEA participation and funding, all data presented in this report are based on a stratified random sample of 84 regular school year projects reporting in FY '85, plus the Boston project. All statewide totals are estimates calculated by multiplying the sample results (excluding Boston) by 3.393 ($3 \times 95 / 84$). The results for Boston were then added to obtain the final statewide estimates for totals. All statewide averages are estimates based on the sample data collected.

LEA PARTICIPATION AND FUNDING

PARTICIPATION OF MASSACHUSETTS LOCAL EDUCATIONAL AGENCIES

TABLE 1
NUMBER AND TYPE OF LOCAL EDUCATIONAL AGENCIES WITH CHAPTER 1 PROGRAMS

	Local	Regional	Vocational- Technical	*Other	TOTAL
Total Number of LEAs Which Operated Chapter 1 Programs	290	35	14	2	341
Number of LEAs Which Did Not Operate Chapter 1 Programs	4	17	13	4	38
Total Number of LEAs In Massachusetts	294	52	27	6	379

* Includes three Independent Vocational School Systems and three County Agricultural Schools

TABLE 1 shows the number of Massachusetts school districts which conducted Chapter 1 programs in Fiscal Year (FY) 1985. Almost all eligible local school districts utilized their Chapter 1 entitlement, while only 35 of the 52 regional school districts and only 14 of the 27 vocational-technical schools chose to operate a Chapter 1 program. Of the 379 school districts, 341 (90%) had Chapter 1 programs.

The actual number of Chapter 1 programs operating in FY85 was less than 341. This occurred because 69 school districts participated in 19 cooperative Chapter 1 programs. Thus, there were 291 (341-69+19) actual Chapter 1 programs in Massachusetts during FY85.

ALLOCATIONS BY COUNTY

Allocation to each county is based on the number of low-income children, ages 5-17. Twenty-three percent of the state's total grant was earmarked for Suffolk County—Boston, Chelsea, Revere and Winthrop. In addition, 17% of the statewide allocation was targeted for Middlesex County. This county includes Cambridge, Everett, Lowell, Malden and Somerville. TABLE 2 shows the allocation of Chapter 1 funds by county.

TABLE 2
ALLOCATION OF CHAPTER 1 FUNDS

County	Allocation
Barnstable	\$ 1,443,372.95
Berkshire	1,576,436.78
Bristol	6,652,729.53
Dukes	78,544.62
Essex	7,579,094.05
Franklin	706,901.60
Hampden	7,744,499.78
Hampshire	1,029,396.58
Middlesex	10,559,631.46
Nantucket	28,258.34
Norfolk	4,013,168.19
Plymouth	4,732,082.50
Suffolk	14,159,285.31
Worcester	7,492,694.97
TOTAL	\$67,796,096.66

DESCRIPTION OF CHAPTER 1 PROGRAMS

STUDENT PARTICIPATION

Estimates based on the sample of Massachusetts Chapter 1 programs reporting in FY85 indicate that there were 1,713 public schools, that 1,126 (65.7%) of them were eligible for Chapter 1 services, and that 1,042 (60.8%) of them received Chapter 1 services (see Tables 3 and 4). More than ninety percent of all eligible public schools received services. Percentages of schools eligible and served were higher for schools classified as elementary and junior high and were lower for high schools.

Table 5 shows that the estimated number of students eligible for Chapter 1 services was 116,171 and that over seventy percent of these students actually received services. (Note that these data represent eligible students in eligible public schools. They do not include students who might have been eligible for Chapter 1 services if their school had been eligible.) Percentages of eligible students served were also higher in elementary and junior high schools. While over 85 percent of eligible students were served in junior highs, only 33.6 percent were served in high schools.

The number and percent of students served within Chapter 1 programs in both public and non-public schools is shown in TABLE 6. The concentration of students was in grades 1-6. These grades accounted for 57,140 (64%) of the total Chapter 1 student population. Pre-kindergarten and kindergarten programs accounted for 8,177 students or 9% of the total population, while 23,301 students (26%) were in secondary level Chapter 1 programs (grades 7-12).

The distribution across grades for both public and non-public programs was about the same. The percentage of students in grades 1-6 was slightly higher in non-public schools, and there were relatively more public school students in grades 7-12. Overall, 92% of the total number of chapter 1 students were served in the public schools and the remaining 8% within non-public schools.

TABLE 3
NUMBER OF PUBLIC SCHOOLS SERVED BY CHAPTER 1 BY GRADE SPAN

Grade Span	Total Number of Schools	Number of Eligible Schools	Number of Schools Served
Elementary (PreK-6)	1,180	788	768
Junior High (7-9)	290	205	183
High School (10-12)	243	133	91
TOTAL	1,713	1,126	1,042

TABLE 4
PERCENT OF PUBLIC SCHOOLS SERVED BY CHAPTER 1 BY GRADE SPAN

Grade Span	Percent of All Schools Eligible	Percent of All Schools Served	Percent of Eligible Schools Served
Elementary	66.8	65.1	97.5
Junior High	70.7	63.1	89.3
High School	54.7	37.4	68.4
TOTAL	65.7	60.8	92.5

TABLE 5
NUMBER AND PERCENT OF ELIGIBLE PUBLIC SCHOOL STUDENTS SERVED BY CHAPTER 1 BY GRADE SPAN

Grade Span	Number of Students Eligible	Number of Students Served	Percentage Students Served
Elementary	80,156	59,699	74.5
Junior High	19,310	16,489	85.4
High School	16,705	5,611	33.6
TOTAL	116,171	81,799	70.4

TABLE 6
NUMBER AND PERCENT OF STUDENTS SERVED BY CHAPTER 1 AT EACH GRADE LEVEL

Grade Level	Public Schools		Non-Public Schools		Total	
	Number	Percent	Number	Percent	Number	Percent
Pre-Kindergarten	1,471	1.8	0	0.0	1,417	1.6
Kindergarten	6,353	7.8	407	6.0	6,760	7.6
Grade 1	10,195	12.5	1,077	15.8	11,272	12.7
Grade 2	9,919	12.1	1,043	15.3	10,962	12.4
Grade 3	8,300	10.1	907	13.3	9,207	10.4
Grade 4	8,275	10.1	900	13.2	9,175	10.4
Grade 5	7,809	9.5	796	11.7	8,605	9.7
Grade 6	7,377	9.0	542	7.9	7,919	8.9
Grade 7	6,440	7.9	519	7.6	6,959	7.9
Grade 8	5,237	6.4	425	6.2	5,662	6.4
Grade 9	4,812	5.9	77	1.1	4,889	5.5
Grade 10	3,256	4.0	49	0.7	3,305	3.7
Grade 11	1,372	1.7	39	0.6	1,411	1.6
Grade 12	983	1.2	38	0.6	1,021	1.2
TOTAL (unduplicated count)	81,799	100.0	6,819	100.0	88,618	100.0

CHAPTER 1 SERVICES PROVIDED TO STUDENTS

The number of students receiving various types of instructional and supportive services is shown in TABLE 7. These numbers are also presented as percentages of the total of 88,618 students served. The most widely offered Chapter 1 service clearly was reading. Reading services were received by 60% of all participating students. Reading was followed by mathematics (30.0%), and other language arts (11.3%).

TABLE 7
NUMBER OF STUDENTS SERVED BY CHAPTER 1 IN EACH SERVICE AREA

Types of Services	Total Number of Students Served	Percent of Students Served
INSTRUCTIONAL		
Reading	53,464	60.3
Mathematics	26,623	30.0
Other Language Arts	9,994	11.3
Other Instructional Services	7,281	8.2
SUPPORTIVE SERVICES		
Health and Nutrition	105	0.1
Social and Emotional Development	4,664	5.3
Pupil Transportation	205	0.2
Other Support Services	590	0.7

The majority of Chapter 1 programs provided instructional services in a pull-out setting (see Table 8). Pull-out and regular classroom settings were employed in 89.5 percent of the reading programs, 90.4 percent of the mathematics programs, and 95.2 percent of language arts programs.

TABLE 8
PERCENT OF CHAPTER 1 PROJECTS PROVIDING INSTRUCTIONAL SERVICES IN DIFFERENT SETTINGS FOR EACH SUBJECT AREA

Project Setting	Reading	Mathematics	Language Arts
Pull-Out	60.6	58.1	66.7
Regular Classroom	9.2	9.7	19.0
Laboratory	2.6	1.6	0.0
Pull-Out and Regular Classroom	19.7	22.6	9.5
Pull-Out and Laboratory	7.9	8.0	4.8
TOTAL	100.0	100.0	100.0

TYPE OF STAFF

TABLE 9 shows the amount and percentage of full-time equivalent staff employed in Chapter 1 programs during the regular school term. The vast majority of staff time in Chapter 1 programs (over 89%) can be accounted for by teachers and teacher-aides. In contrast, only 3.3% of Chapter 1 staff time was accounted for by administrative staff.

TABLE 9
NUMBER OF STAFF (in FTE's) EMPLOYED IN CHAPTER 1 PROJECTS IN EACH JOB CLASSIFICATION

Job Classification	Full-Time Equivalent	Percentage
Teachers	2,249	62.2
Teacher-Aides	998	27.6
Administrative Staff	118	3.3
Clerical Staff	108	3.0
Staff Providing Supportive Services	56	1.5
Curriculum Specialists	10	0.3
Parent Coordinators	23	0.6
Others (Tutors, Counselors, etc.)	56	1.5
TOTAL	3,618	100.0

PARENT INVOLVEMENT

The total number of Chapter 1 parents who were elected members of parent advisory councils (PACs) during FY85 was 4,518 or 92.8 percent of all members (see Table 10). Others, including parents of non-Chapter 1 students and non-parents, accounted for the other 7.2 percent of the members. Almost half (2,084) of PAC members received training related to advisory council activities.

Chapter 1 programs reported that PACs met on the average about four times a year (not counting the initial, "open house" meeting). The average attendance was a little over nine people. Sixty-nine percent of all programs provided Chapter 1 funds for advisory council activities.

Chapter 1 programs also reported that 4,012 parents of Chapter 1 students participated in project planning, implementation and/or evaluation, and that 1,369 parents worked as volunteers in Chapter 1 activities.

TABLE 10
PARTICIPATION IN CHAPTER 1 PARENT ADVISORY COUNCILS

Types of PAC Members	Number	Percentage
Parents of Chapter 1 Public School Students	4,318	88.7
Parents of Chapter 1 Nonpublic School Students	200	4.1
Other	351	7.2
TOTAL	4,869	100.0

EFFECT ON EDUCATIONAL ACHIEVEMENT

OVERVIEW

As stated earlier in the Introduction to this report, the Title I Evaluation and Reporting System (TIERS) was designed to aggregate achievement test results for Chapter 1 students in grades 2-12 in the three basic skills areas: reading, mathematics and language arts. A Chapter 1 program may continue to utilize one of three basic evaluation designs to measure the impact of the program on their students. The three basic evaluation designs are:

- (1) *MODEL A*: the Norm-Referenced Model
- (2) *MODEL B*: the Comparison Group Model
- (3) *MODEL C*: the Special Regression Model

The three evaluation models utilize a common definition of project impact in measuring the effectiveness of a Chapter 1 program in improving student achievement. The impact attributed to the Chapter 1 program is defined as the difference between student performance on a post-test and an estimate of what this performance would have been had the students not participated in the Chapter 1 program. In brief, the project's overall impact is defined as the post-test performance minus the expected no-project performance.

$$\text{PROJECT IMPACT} = \begin{array}{cc} \text{OBSERVED} & \text{EXPECTED} \\ \text{Post-Project} & \text{No-Project} \\ \text{Performance} & \text{Performance} \end{array} -$$

For all three evaluation models, the observed post-project performance is always the average post-test score of the project's Chapter 1 students. The expected no-project performance is derived differently in each of the three designs.

THE NORM-REFERENCED DESIGN: MODEL A

All of the Chapter 1 programs reporting achievement data in the FY85 sample employed the Norm-Referenced Model. In the Model A evaluation design, the expected no-project performance is derived through comparisons with the achievement test publisher's national norms. The average pre-test score for the Chapter 1 students is compared to the distribution of scores obtained by the norm group at the same time of the school year. This comparison requires obtaining the percentile rank equivalent of the average pre-test score. It is assumed that the Chapter 1 students would have an average post-test score at the same percentile rank if they had not participated in the project. Thus, the expected no-project performance is the percentile rank of the group's average pre-test score and the observed post-project performance is the percentile rank of the average post-test score. If the percentile rank of the average post-test score is greater than the percentile rank of the average pre-test score, the difference is attributed to the effectiveness of the Chapter 1 program. If the difference is zero or negative, the Chapter 1 program is said to have no positive impact.

REPORTING STATEWIDE RESULTS

The statewide analysis of Chapter 1 impact was carried out by aggregating the impacts or gains, defined above, across all reporting Chapter 1 projects. Since Chapter 1 projects vary in terms of instructional subject areas (reading, language arts, or mathematics) and grades (2-12), separate aggregations were performed within these categories. Also, the test administration schedule for pre- and post-testing may influence the type of results a project can expect to achieve. Therefore, separate aggregations were carried out for Chapter 1 projects using a year-to-year testing schedule and those using a fall-to-spring schedule.

In order to aggregate program impact across Chapter 1 projects, the percentile ranks of the average pre- and post-test scores for each program were converted to an equal-interval scale, known as the Normal Curve Equivalent (NCE). This facilitated the aggregation of results from different programs.

The remainder of this section of the evaluation report presents the aggregated Chapter 1 project impact on student achievement in reading, mathematics, and language arts for grades 2 through 12 in Massachusetts for FY85. Tables 10, 11, 12 and 13 also contain national NCE mean gain (weighted mean) data in the subjects of reading and mathematics.

CHAPTER 1 IMPACT: ACHIEVEMENT TEST RESULTS

TABLE 11 shows the number of Chapter 1 program participants for whom both pre- and post-test achievement test scores were obtained during FY85. The number of participants tested is presented by the three basic skills areas—reading, mathematics, and language arts. In addition, the table breaks these numbers down by the different testing schedules employed to assess program impact.

Overall, the majority of Chapter 1 students tested participated in reading programs (36,683 or 61%). Of these, 92% were tested on a fall-to-spring schedule. Students in mathematics programs accounted for 34% of the students and language arts accounted for only five percent. Most students were tested using fall-to-spring schedules (90%).

TABLE 11
NUMBER OF STUDENTS WITH PRE-TEST AND POST-TEST
ACHIEVEMENT TEST SCORES IN SCHOOL YEAR PROJECTS, GRADES 2-12
FOR EACH SUBJECT AREA AND TESTING SCHEDULE

Subject Area	Testing Schedule		TOTAL
	Fall-to-Spring	Year-to-Year	
Reading	33,653	3,030	36,683
Mathematics	18,362	2,063	20,425
Language Arts	2,306	707	3,013
TOTAL	54,321	5,800	60,121

IMPACT OF READING PROGRAMS

The aggregated statewide Chapter 1 impact for students in reading programs is presented in TABLES 12 and 13. TABLE 12 reports these gains for projects which employed a fall-to-spring testing schedule. Projects with a fall-to-spring testing schedule had an average impact of 4.8 NCEs, while those which used a year-to-year schedule averaged 3.9 NCEs. For reading projects using a fall-to-spring testing schedule, within Massachusetts greater than average gains were made in grades 2, 5, 6, 7, 9 and 10. For projects utilizing a year-to-year testing schedule (see TABLE 13), the greater than average gains within Massachusetts were at grades 2, 3, 4, 8 and 12.

Overall, TABLES 12 and 13 show a positive impact of the Chapter 1 reading instruction at almost all grade levels—regardless of the testing schedule employed to assess program effectiveness. The decrease of 3.0 for grade 10 students tested with an annual schedule was based on a small number of students. Tables 12 and 13 also contain national NCE data by grade level. Table 12 shows that Massachusetts Chapter 1 projects using a fall-to-spring testing schedule had gains greater than national gains in grades 9 and 10 and Table 13 shows that Massachusetts Chapter 1 projects using an annual testing schedule had gains greater than national gains in grades 2, 3, 4, 5, 8 and 12.

TABLE 12
READING ACHIEVEMENT RESULTS FOR SCHOOL YEAR PROJECTS
WITH FALL-TO-SPRING TESTING SCHEDULES—EXPRESSED IN
NORMAL CURVE EQUIVALENT (NCE) SCORES

Grade	Number of Students with Pre- and Post- Test Scores	NCE Post-test Mean (Weighted Mean)	Massachusetts NCE Mean Gain (Weighted Mean)	National NCE Mean Gain (Weighted Mean)
2	6,018	45.2	7.1	9.3
3	4,713	42.4	3.4	7.8
4	4,459	40.7	3.1	7.3
5	4,220	42.0	4.9	6.4
6	4,052	40.9	5.2	6.2
7	3,667	39.2	5.0	5.4
8	2,643	38.6	3.9	5.2
9	1,592	36.7	5.5	4.9
10	1,385	37.3	6.1	3.8
11	537	30.9	2.3	3.3
12	367	24.9	1.2	3.7
TOTAL	33,653	40.9	4.8	—

TABLE 13
READING ACHIEVEMENT RESULTS FOR SCHOOL YEAR PROJECTS
WITH YEAR-TO-YEAR TESTING SCHEDULES—EXPRESSED IN
NORMAL CURVE EQUIVALENT (NCE) SCORES

Grade	Number of Students with Pre- and Post- Test Scores	NCE Post-test Mean (Weighted Mean)	Massachusetts NCE Mean Gain (Weighted Mean)	National NCE Mean Gain (Weighted Mean)
2	644	47.6	4.7	1.5
3	616	45.2	4.4	2.7
4	437	44.1	4.6	3.4
5	359	45.2	3.9	3.7
6	447	41.1	1.6	3.4
7	218	39.6	2.3	3.9
8	225	38.4	6.4	2.5
9	28	41.0	0.0	1.5
10	25	35.0	-3.0	1.5
11	4	20.0	1.0	1.7
12	7	19.0	6.0	0.1
TOTAL	3,030	43.8	3.9	—

IMPACT OF READING PROGRAMS

The aggregated statewide Chapter 1 impact for students in reading programs is presented in TABLES 12 and 13. TABLE 12 reports these gains for projects which employed a fall-to-spring testing schedule. Projects with a fall-to-spring testing schedule had an average impact of 4.8 NCEs, while those which used a year-to-year schedule averaged 3.9 NCEs. For reading projects using a fall-to-spring testing schedule, within Massachusetts greater than average gains were made in grades 2, 5, 6, 7, 9 and 10. For projects utilizing a year-to-year testing schedule (see TABLE 13), the greater than average gains within Massachusetts were at grades 2, 3, 4, 8 and 12.

Overall, TABLES 12 and 13 show a positive impact of the Chapter 1 reading instruction at almost all grade levels—regardless of the testing schedule employed to assess program effectiveness. The decrease of 3.0 for grade 10 students tested with an annual schedule was based on a small number of students. Tables 12 and 13 also contain national NCE data by grade level. Table 12 shows that Massachusetts Chapter 1 projects using a fall-to-spring testing schedule had gains greater than national gains in grades 9 and 10 and Table 13 shows that Massachusetts Chapter 1 projects using an annual testing schedule had gains greater than national gains in grades 2, 3, 4, 5, 8 and 12.

TABLE 12
READING ACHIEVEMENT RESULTS FOR SCHOOL YEAR PROJECTS
WITH FALL-TO-SPRING TESTING SCHEDULES—EXPRESSED IN
NORMAL CURVE EQUIVALENT (NCE) SCORES

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7	3,667	39.2	5.0	5.4
8	2,643	38.6	3.9	5.2
9	1,592	36.7	5.5	4.9
10	1,385	37.3	6.1	3.8
11	537	30.9	2.3	3.3
12	367	24.9	1.2	3.7
TOTAL	33,653	40.9	4.8	—

TABLE 13
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Grade	Number of Students with Pre- and Post- Test Scores	NCE Post-test Mean (Weighted Mean)	Massachusetts NCE Mean Gain (Weighted Mean)	National NCE Mean Gain (Weighted Mean)
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7	218	39.6	2.3	3.9
8	225	38.4	6.4	2.5
9	28	41.0	0.0	1.5
10	25	35.0	-3.0	1.5
11	4	20.0	1.0	1.7
12	7	19.0	6.0	0.1
TOTAL	3,030	43.8	3.9	—

IMPACT OF MATHEMATICS PROGRAMS

TABLES 14 and 15 present the aggregated statewide impact of Chapter 1 programs providing supplementary mathematics instruction. TABLE 14 shows NCE gains at all grade levels for programs employing a fall-to-spring testing schedule. The overall NCE mean gain was 8.7 within Massachusetts. Greater than average NCE gains were achieved in grades 2, 3 and 12. TABLE 15 reports aggregated program impact by grade for programs using a year-to-year testing schedule. The average NCE gain of those mathematics programs was 6.4. Within Massachusetts above average gains for year-to-year programs were in grades 4 and 6. Tables 14 and 15 also contain national NCE data by grade level. Table 14 shows that Massachusetts Chapter 1 projects using a fall-to-spring testing schedule had gains greater than national gains in grades 2, 3, 9, 10, 11 and 12. Table 15 shows that Massachusetts Chapter 1 projects using an annual schedule had gains greater than national gains in grades 2, 3, 4, 5, 6, 7 and 8.

TABLE 14
MATHEMATICS ACHIEVEMENT RESULTS FOR SCHOOL YEAR PROJECTS
WITH FALL-TO-SPRING TESTING SCHEDULES—EXPRESSED IN
NORMAL CURVE EQUIVALENT (NCE) SCORES

Grade	Number of Students with Pre- and Post- Test Scores	NCE Post-test Mean (Weighted Mean)	Massachusetts NCE Mean Gain (Weighted Mean)	National NCE Mean Gain (Weighted Mean)
2	2,847	50.0	13.7	13.3
3	2,070	48.7	11.1	11.0
4	3,127	45.6	8.4	10.4
5	3,000	44.7	6.6	8.7
6	2,724	44.9	7.9	8.4
7	1,433	42.8	5.6	6.3
8	1,042	43.9	4.3	5.6
9	1,218	44.3	8.6	7.0
10	577	42.6	7.0	3.8
11	204	36.8	7.7	5.2
12	120	38.4	10.7	5.3
TOTAL	18,362	45.7	8.7	—

TABLE 15
MATHEMATICS ACHIEVEMENT RESULTS FOR SCHOOL YEAR PROJECTS
WITH YEAR-TO-YEAR TESTING SCHEDULES—EXPRESSED IN
NORMAL CURVE EQUIVALENT (NCE) SCORES

Grade	Number of Students with Pre- and Post- Test Scores	NCE Post-test Mean (Weighted Mean)	Massachusetts NCE Mean Gain (Weighted Mean)	National NCE Mean Gain (Weighted Mean)
2	500	44.9	5.6	4.0
3	415	43.0	5.2	2.5
4	398	40.8	7.8	3.2
5	260	37.2	5.3	4.2
6	236	42.8	11.1	3.4
7	162	41.4	4.3	3.8
8	92	40.0	4.1	2.6
TOTAL	2,063	42.0	6.4	—

IMPACT OF LANGUAGE ARTS PROGRAMS

TABLE 16 presents the aggregated statewide impact of Chapter 1 programs providing instructional services in language arts. For programs testing fall-to-spring, positive gains were made at all grade levels. Within Massachusetts above average gains were made at grades 2, 3, 4, 5 and 11. Results for year-to-year testing are not presented due to the small numbers of students involved. National language arts achievement results are not available.

TABLE 16
LANGUAGE ARTS ACHIEVEMENT RESULTS FOR SCHOOL YEAR PROJECTS
WITH FALL-TO-SPRING TESTING SCHEDULES—EXPRESSED IN
NORMAL CURVE EQUIVALENT (NCE) SCORES

Grade	Number of Students with Pre- and Post- Test Scores	NCE Post-test Mean (Weighted Mean)	Massachusetts NCE Mean Gain (Weighted Mean)
2	366	55.4	12.9
3	176	51.6	12.1
4	229	50.8	12.7
5	194	52.9	13.3
6	172	50.7	6.9
7	299	44.5	3.2
8	222	44.3	4.2
9	461	42.4	1.9
10	141	37.6	2.6
11	32	45.0	8.0
12	14	38.0	2.0
TOTAL	2,306	47.7	7.3

